Hereinafter, the operations of the driving circuit of a microwave oven according to the third embodiment will be described in detail.

First of all, if the primary interlock switch PSW and the secondary interlock switch SSW are turned on to receive a DC voltage of 15V outputted from the voltage regulator 30 through the voltage terminal Vcc, the pulse driving unit VFC2 generates the first and second pulse signals alternating the pulse generating periods through the first and second pulse output terminals OUT1 and OUT2 thereof. Therefore, as stated above, an AC voltage is applied to the high voltage transformer HVT, to thereby drive the magnetron MGT. At this time, the switch terminals of the first and second monitor switches MSW11 and MSW22 are connected to the second switching contacts N12 and N22.

In the meantime, during the driving operations, if an excessive current is generated in a closed circuit formed by the alternate switching-on operations of the first and second field effect transistors FET1 and FET2, a current flowing through the first and second transistors 50 and 51 is increased as stated above. As a result, the comparator 54 outputs a comparison result signal of a high level corresponding to the excessive current detection.

Therefore, the pulse driving unit VFC2 continuously generates a feedback control signal through the feedback terminal FB to maintain the detection state of an excessive voltage, and the first and second field effect transistors FET1 and FET2 is controlled to be switched off, so that the driving of the magnetron is stopped.

In the meantime, if the primary interlock switch PSW and the secondary interlock switch SSW are abnormally short-circuited when the cooking chamber door is opened, a current flowing through the first and second field effect transistors FET1 and FET2 by the

switching terminals of the first and second monitor switches MSW11 and MSW22 switched to the first switching contacts N11 and N21 is bypassed. At this time, the fuse FUSE1 is opened by a large current.

As a result, the driving of the magnetron MGT through the high voltage transformer HVT is stopped, to thereby protect circuit components.

As stated above, the driving circuit of a DC microwave oven according to the present invention is devised to control the driving of the push-pull circuit of converting a DC voltage into an AC voltage by a pulse signal outputted from the pulse driving unit, and has low-current interlock switches in power supply paths connecting the DC power supply and the pulse driving unit, so that the switching-on and switching-off controls of the DC power supply in association with the cooking chamber door are facilitated.

Further, the driving circuit of a DC microwave oven according to the present invention has advantages capable of stopping the driving of the magnetron as the malfunctions of the interlock switches occurs or an excessive current is generated from the DC power supply due to the occurrence of abnormal states, and of preventing damages to circuit components due to the excessive current.

Although the preferred embodiments of the present invention have been described, it will be understood by those skilled in the art that the present invention should not be limited to the described preferred embodiments, but various changes and modifications can be made within the spirit and scope of the present invention as defined by the appended claims.

Article 19

WHAT IS CLAIMED IS:

1. A driving circuit of a DC microwave oven having an inverting unit for converting a DC voltage of a DC power supply into an AC voltage by driving pulses, a high voltage transformer for transforming the AC voltage applied by the driving of the inverter unit and supplying the transformed AC voltage to a magnetron, and a pulse driving unit for generating the driving pulses, comprising:

an excessive current detecting unit for detecting a current supplied from the DC power supply to the inverting unit, and outputting an excessive current detecting signal to the pulse driving unit to cut off the generation of the driving pulses of the pulse driving unit if the detected current corresponds to an excessive current.

2. The driving circuit as claimed in claim 1, wherein the excessive current detecting unit includes:

an excessive current detecting part for detecting a current supplied to the inverting unit; and

a comparison part for comparing a detecting signal outputted from the excessive current detecting part with a predetermined reference signal, and outputting a comparison result signal, wherein the pulse driving unit stops the generation of the driving pulses if the comparison result signal of the comparator corresponds to the excessive current detecting signal.

3. The driving circuit as claimed in claim 2, further comprising: